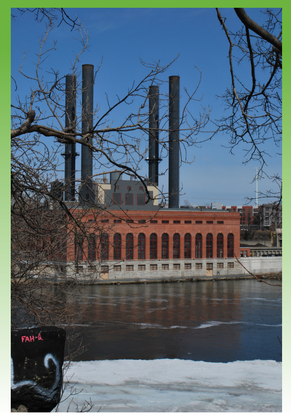
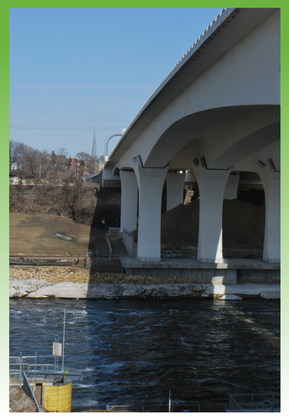
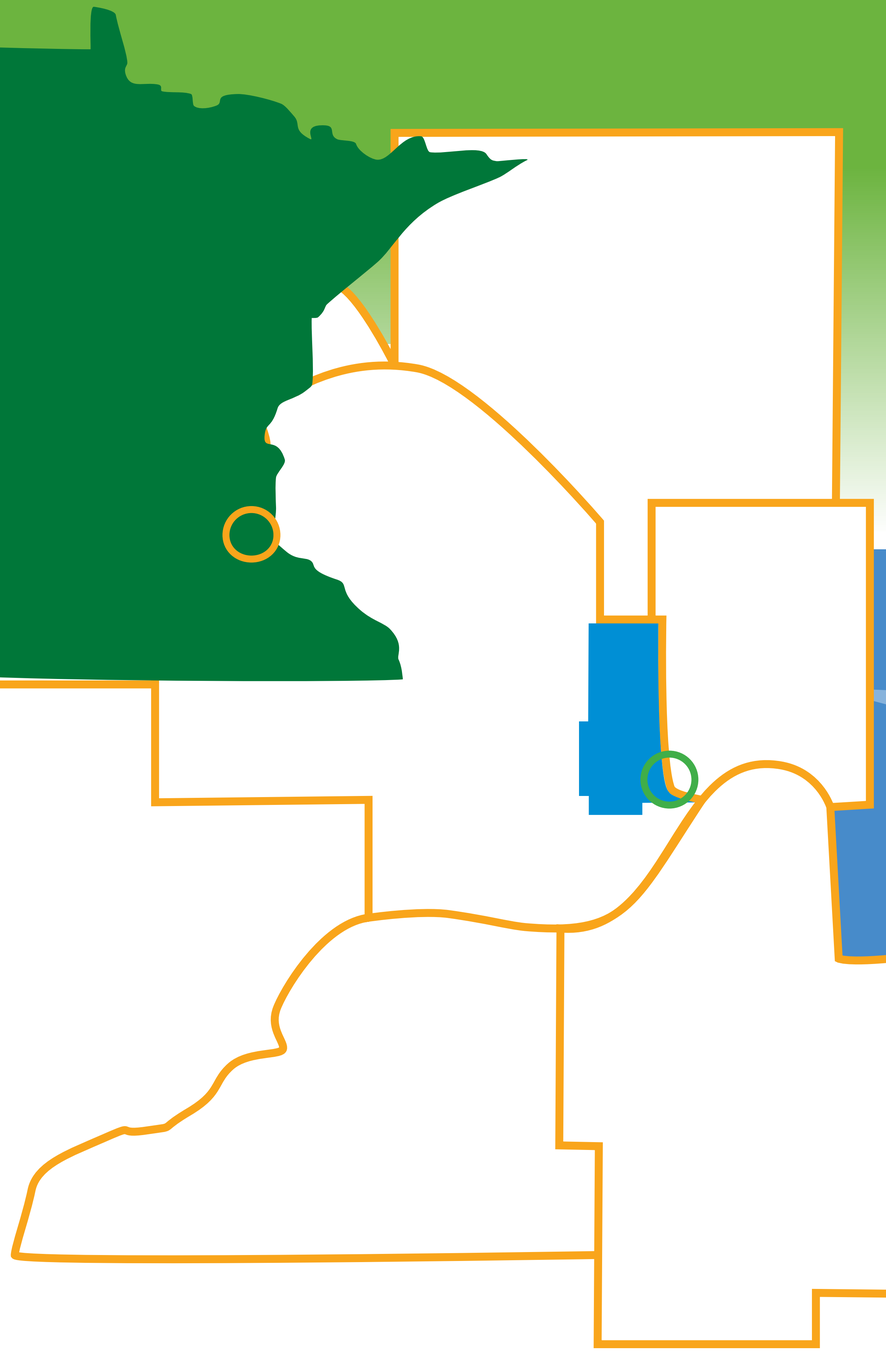
Saint Anthony's Falls; Minneapolis, Minnesota



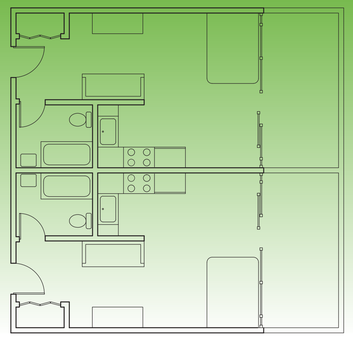


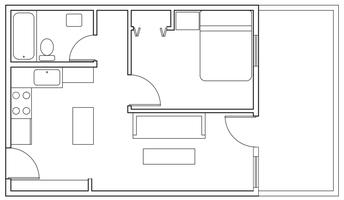


The Twin Cities, as Minneapolis and Saint Paul are called, is an area that is rich with people that work for and desire a connection with the natural environment. The area is filled with many lakes, waterways, and parks. The Cities are the top biking cities in the United States, having taken over Portland. The desire to be economical and affordable extends past transporation, however. There are several successful food co-operatives that provide fresh organic food to its members. The Urban Arcology would grow food closer to those who would eat it, while providing a place for people to live and commune together. Ultimately, architecture is about the people dwell within it.

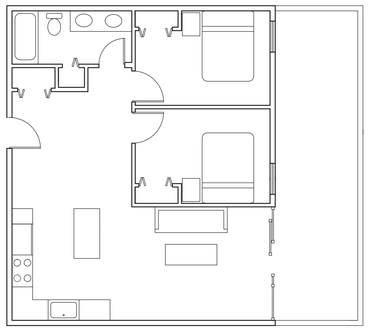
Plans



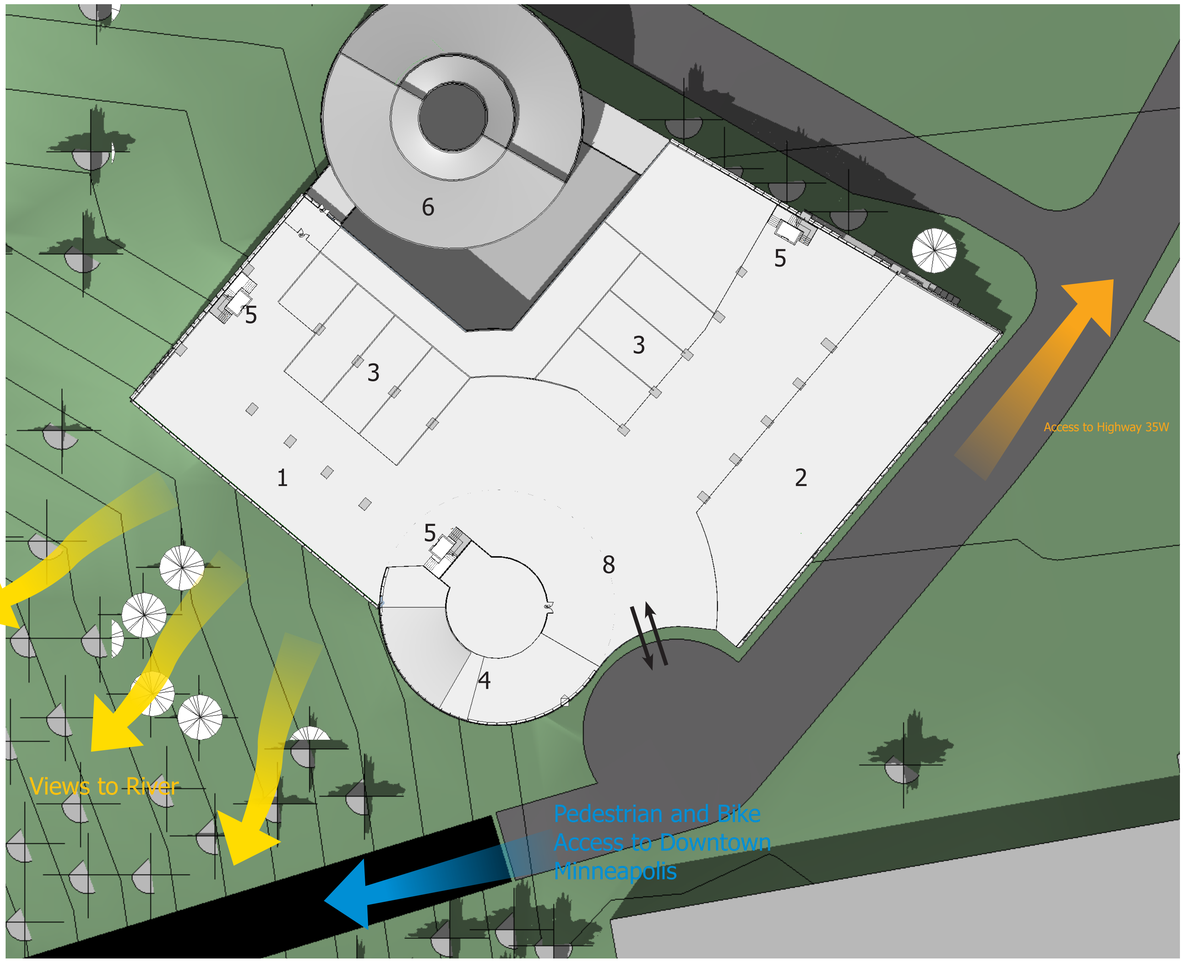
Efficiency



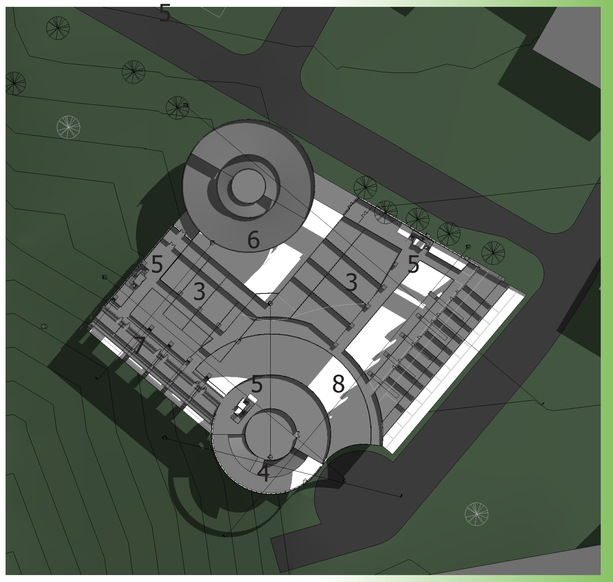
1 Bedroom



2 Bedroom



Site Plan and First Floor Plan



Floors 3-8

1. Community Dining
2. Bike Shop
3. Commercial
4. Vertical Garden
5. Vertical Circulation
6. Parking
7. Residences
8. Atrium

The Urban Arcology

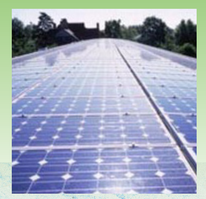
Rethinking Paolo Soleri's thoughts of the Arcology

is a building type that is designed to give back to the city it is a part of. It grows food for residents. It produces electricity by sustainable means. It provides a place for a community of individuals to come together. It is a benevolent building.



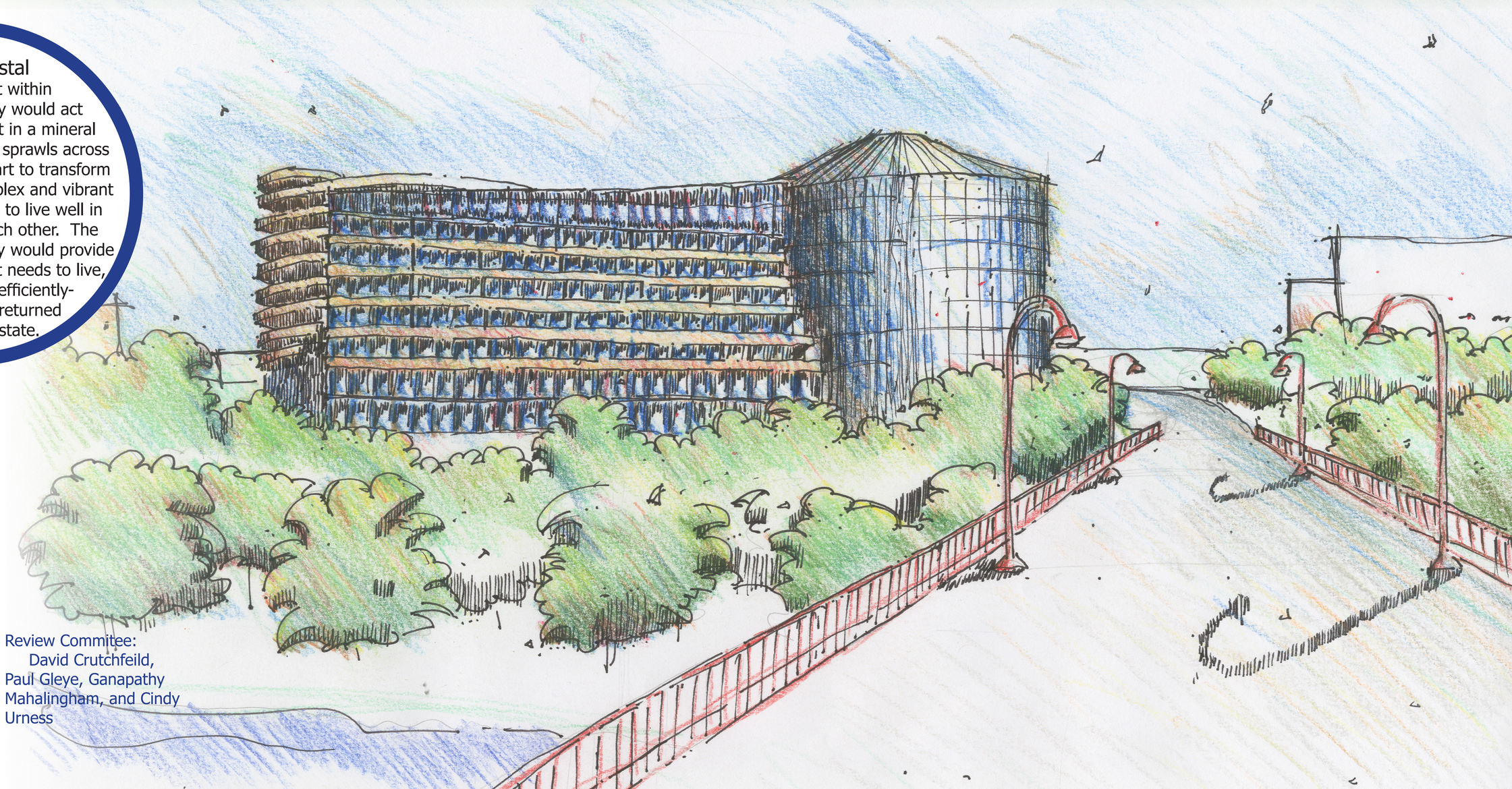







Living Crystal

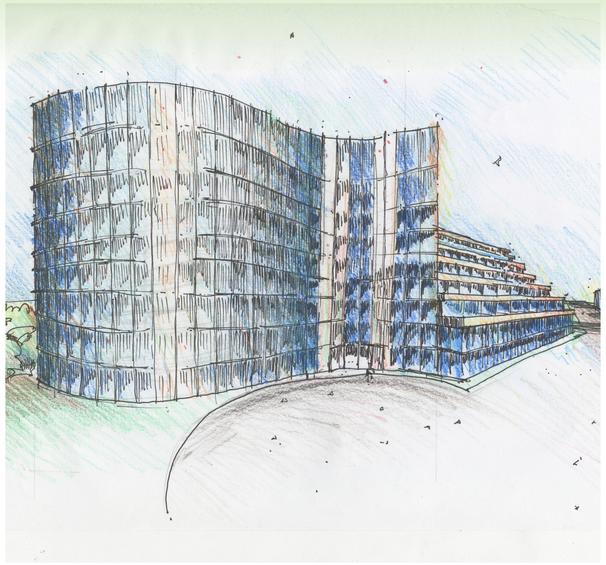
An arcology set within the context of a city would act like a seed crystal set in a mineral solution. The city that sprawls across its landscape would start to transform and solidify into a complex and vibrant space for its residents to live well in close proximity to each other. The crystallization of the city would provide humanity the spaces it needs to live, while allowing innefficiently-used land to be returned to its natural state.

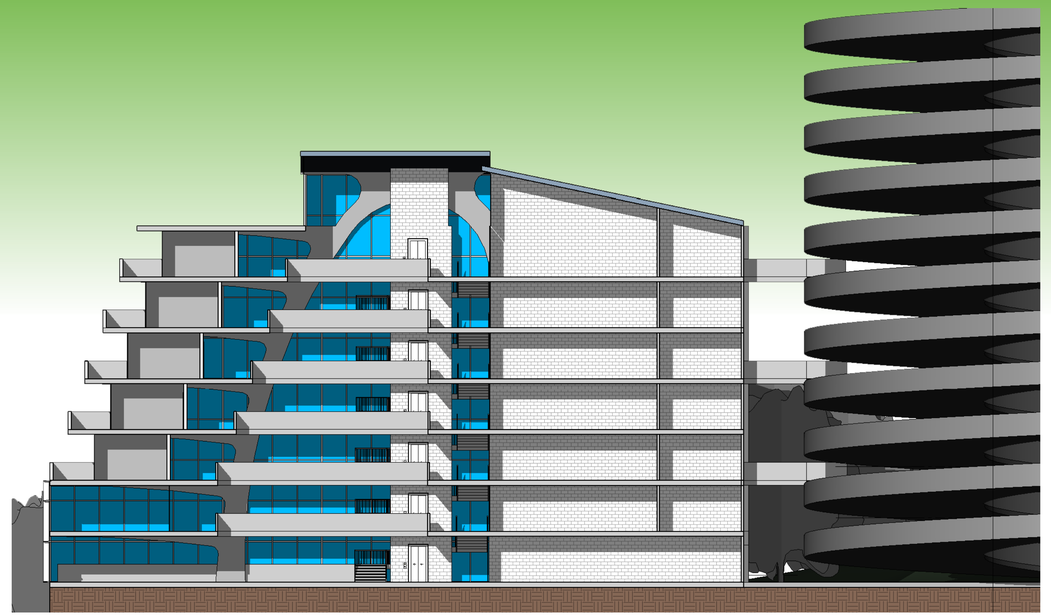


A Design Thesis by:
Nickolaus Corniea
Thesis Professors:
Bakr Aly Ahmed and Darryl Booker

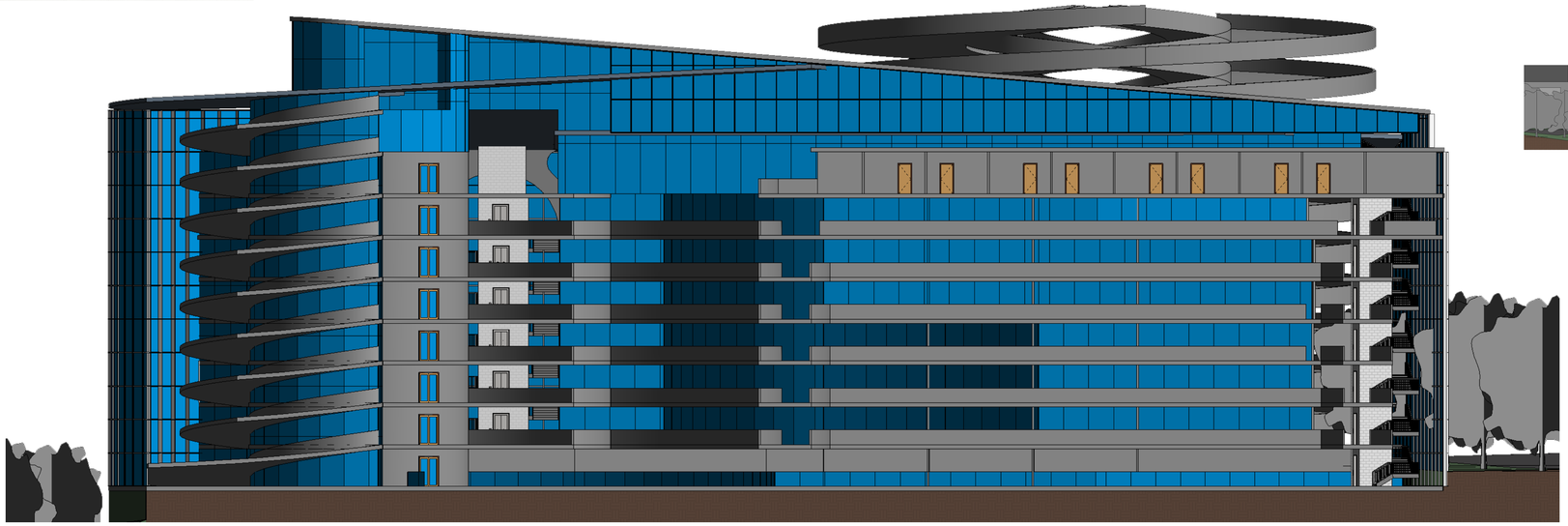
Review Commitee:
David Crutchfeild, Paul Gleye, Ganapathy Mahalingham, and Cindy Urness

Sections



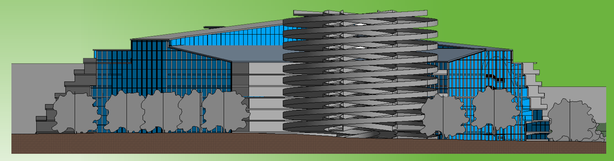


Cross-section through Residences and Commercial spaces

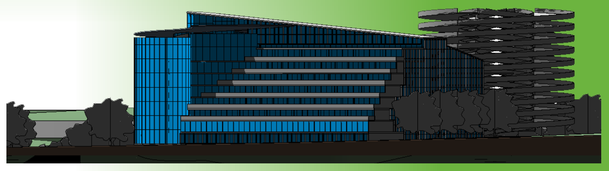


Longitudinal Section through Vertical Farm and Atrium

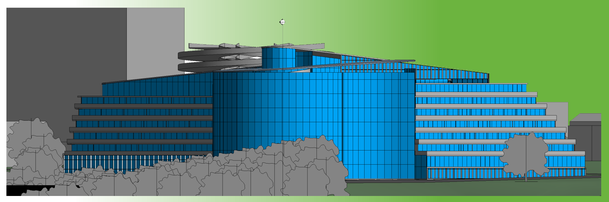
Elevations



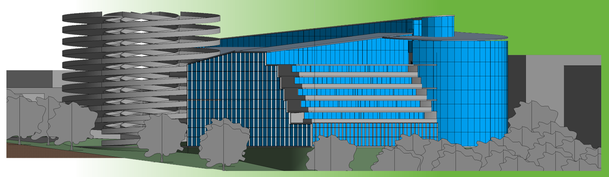
North Elevation



East Elevation

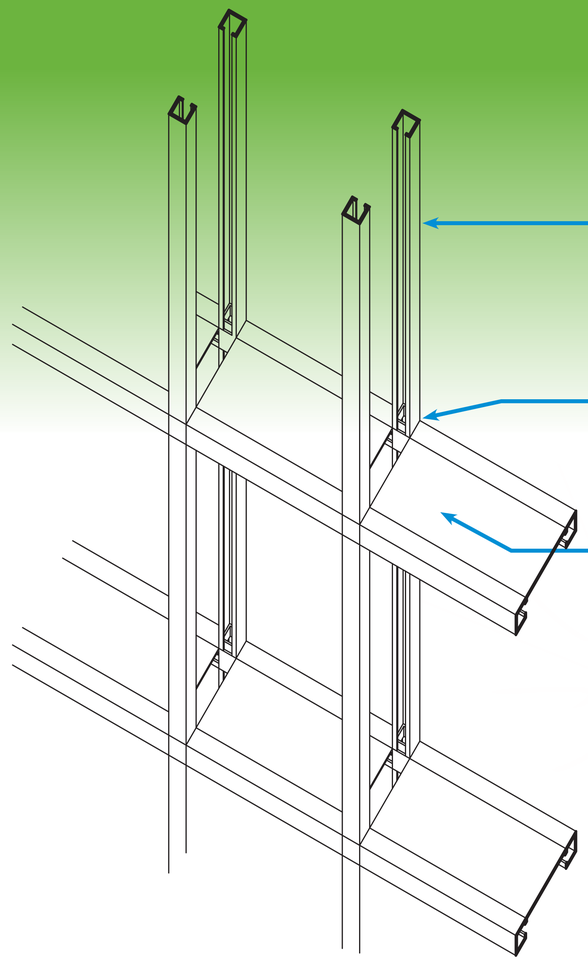


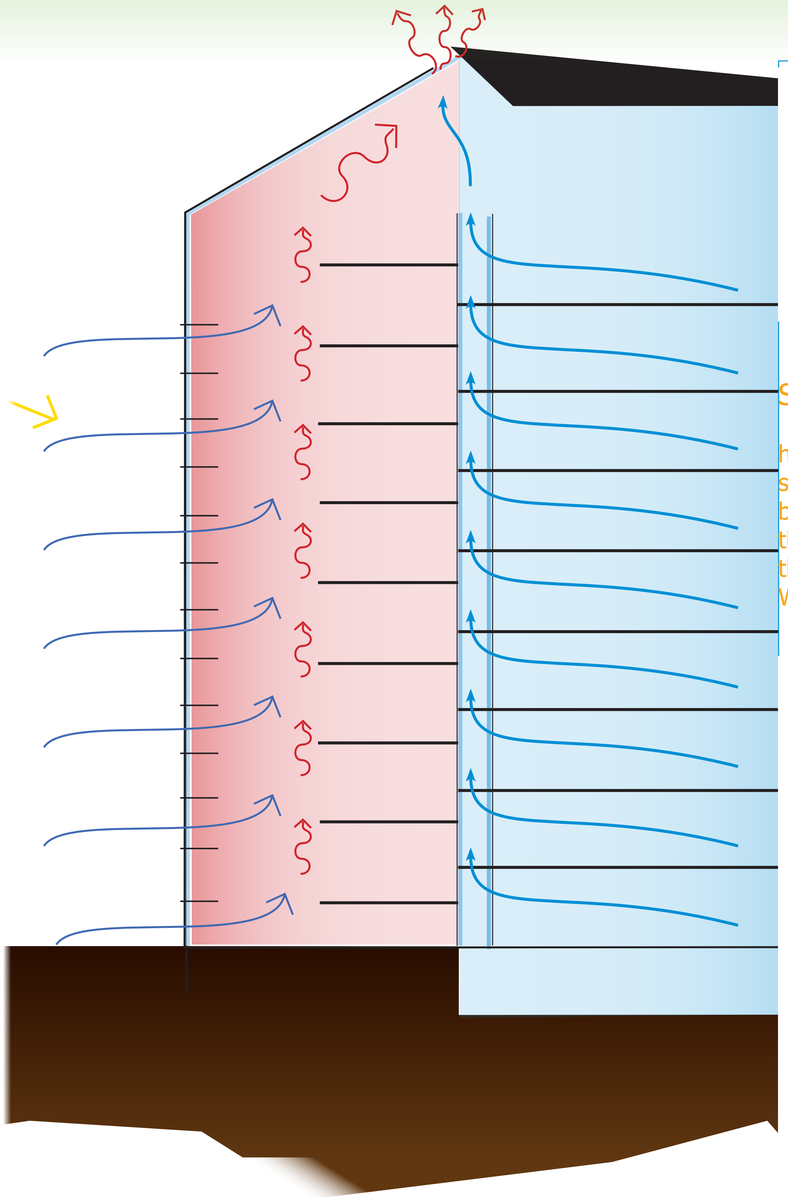
South Elevation

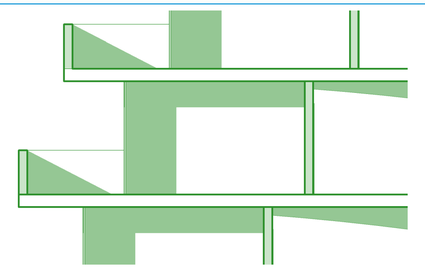


West Elevation

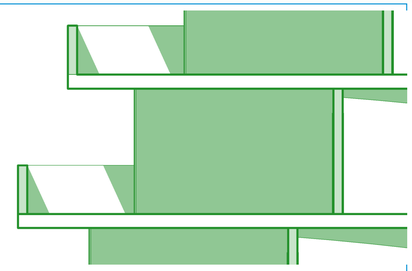
Passive Techniques







December 21

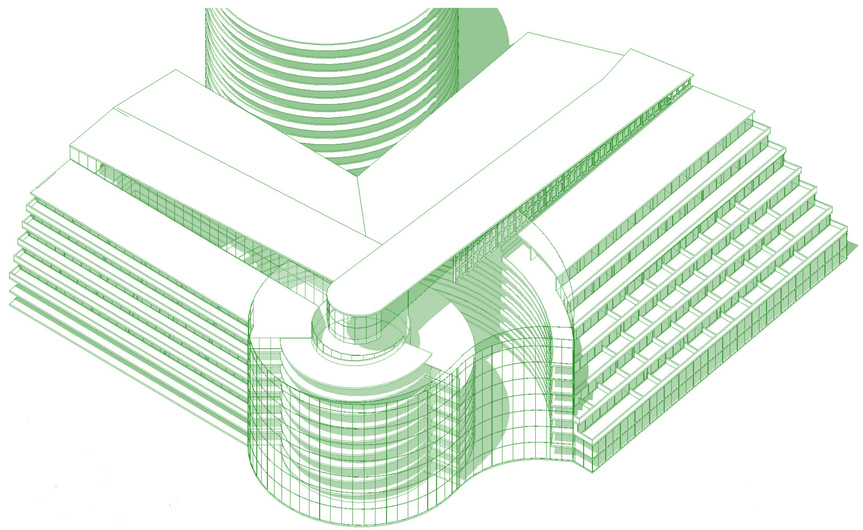


June 21

Solar Study

The optimal roof overhang length has been designed for optimal passive solar heating. The Sun's position had to be determined on the Summer Solstice, the longest day of the year, as well as the day of most potential heat gain. When the sun has reached its highest point (Solar Noon) there will be no direct sunlight allowed in the dwellings.

However during the much colder winter the sun will be welcomed into the dweelings and allowed to heat the space without the need for an active, and mechanical solution.

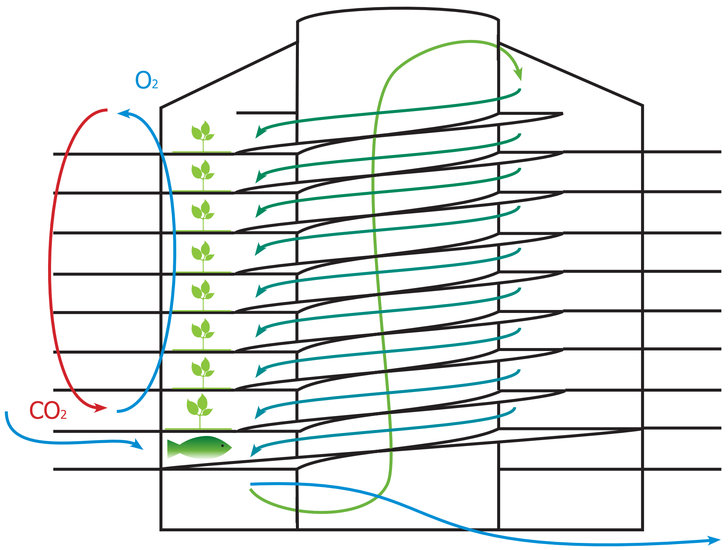


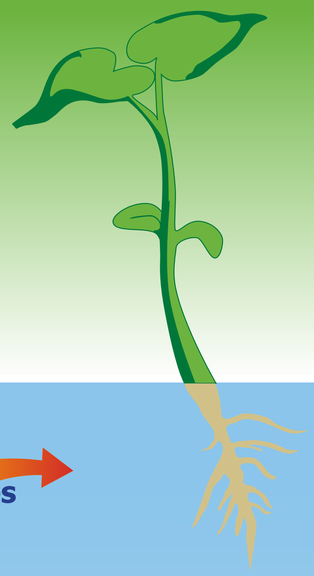
Vertical Garden

Aquaponics

The Vertical Garden uses a type of farming called aquaponics to grow vegetables and fish together. The process relies on the symbiosys of not only plants and aquatic animals, but also bacteria which break down the ammonia excreted by the fish. The two bacteria, nitrosonomas and nitrobacter, break the ammonia into nitrites and then nitrates, respectively. The nitrates are absorbed by the plants and grow.

Aquaponics is a process that is organic and sustainable, that uses less water, and land to grow food near a populace. It is simple enough to be done by Do-It-Yourself'ers in their backyards, or in a large scale manner such as the Urban Arcology





Nitrates

Nitrobacter

Nitrites

Nitrosomonas

Ammonia

Fish Food

Beans

Wild Rice

Spinach

Tomatoes

Crawfish

Tilapia

Sweet Potato

Catfish

Yellow Perch

Onions